

SEQUENCE LISTING

<110> HILTUNEN, Kalervo

<120> A method to control cellular (3R)-hydroxyacyl-CoA esters, precursor molecules for polyhydroxyalkanoate synthesis in genetically modified organisms

<130> 0365-0528P

<140> UNASSIGNED

<141> 2002-02-01

<150> 19991667

<151> 1999-08-03

<160> 24

<170> PatentIn Ver. 2.1

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35 40 45
Gly His Asn Ser Lys Ala Ala Asp Leu Val Val Asp Glu Ile Lys Lys
50 55 60
Ala Gly Gly Ile Ala Val Ala Asn Tyr Asp Ser Val Asn Glu Asn Gly
65 70 75 80
Glu Lys Ile Ile Glu Thr Ala Ile Lys Glu Phe Gly Arg Val Asp Val
85 90 95
Leu Ile Asn Asn Ala Gly Ile Leu Arg Asp Val Ser Phe Ala Lys Met
100 105 110
Thr Glu Arg Glu Phe Ala Ser Val Val Asp Val His Leu Thr Gly Gly
115 120 125
Tyr Lys Leu Ser Arg Ala Ala Trp Pro Tyr Met Arg Ser Gln Lys Phe
130 135 140
Gly Arg Ile Ile Asn Thr Ala Ser Pro Ala Gly Leu Phe Gly Asn Phe
145 150 155 160
Gly Gln Ala Asn Tyr Ser Ala Ala Lys Met Gly Leu Val Gly Leu Ala
165 170 175
Glu Thr Leu Ala Lys Glu Gly Ala Lys Tyr Asn Ile Asn Val Asn Ser

			180					185					190			
Ile	Ala	Pro 195	Leu	Ala	Arg	Ser	Arg 200	Met	Thr	Glu	Asn	Val 205	Leu	Pro	Pro	
His	Ile 210	Leu	Lys	Gln	Leu	Gly 215	Pro	Glu	Lys	Ile	Val 220	Pro	Leu	Val	Leu	
Tyr 225	Leu	Thr	His	Glu	Ser 230	Thr	Lys	Val	Ser	Asn 235	Ser	Ile	Phe	Glu	Leu 240	
Ala	Ala	Gly	Phe	Phe 245	Gly	Gln	Leu	Arg	Trp 250	Glu	Arg	Ser	Ser	Gly 255	Gln	
Ile	Phe	Asn	Pro 260	Asp	Pro	Lys	Thr	Tyr 265	Thr	Pro	Glu	Ala	Ile 270	Leu	Asn	
Lys	Trp	Lys 275	Glu	Ile	Thr	Asp	Tyr 280	Arg	Asp	Lys	Pro	Phe 285	Asn	Lys	Thr	
Gln	His 290	Pro	Tyr	Gln	Leu	Ser 295	Asp	Tyr	Asn	Asp	Leu 300	Ile	Thr	Lys	Ala	
Lys 305	Lys	Leu	Pro	Pro	Asn 310	Glu	Gln	Gly	Ser	Val 315	Lys	Ile	Lys	Ser	Leu 320	
Cys	Asn	Lys	Val	Val 325	Val	Val	Thr	Gly	Ala 330	Gly	Gly	Gly	Leu	Gly 335	Lys	
Ser	His	Ala	Ile 340	Trp	Phe	Ala	Arg	Tyr 345	Gly	Ala	Lys	Val	Val 350	Val	Asn	
Asp	Ile	Lys 355	Asp	Pro	Phe	Ser	Val 360	Val	Glu	Glu	Ile	Asn 365	Lys	Leu	Tyr	
Gly	Glu 370	Gly	Thr	Ala	Ile	Pro 375	Asp	Ser	His	Asp	Val 380	Val	Thr	Glu	Ala	
Pro 385	Leu	Ile	Ile	Gln 390	Thr	Ala	Ile	Ser	Lys	Phe 395	Gln	Arg	Val	Asp	Ile 400	
Leu	Val	Asn	Asn	Ala 405	Gly	Ile	Leu	Arg	Asp 410	Lys	Ser	Phe	Leu	Lys 415	Met	
Lys	Asp	Glu 420	Glu	Trp	Phe	Ala	Val 425	Leu	Lys	Val	His	Leu 430	Phe	Ser	Thr	
Phe	Ser	Leu 435	Ser	Lys	Ala	Val	Trp 440	Pro	Ile	Phe	Thr	Lys 445	Gln	Lys	Ser	
Gly	Phe 450	Ile	Ile	Asn	Thr	Thr 455	Ser	Thr	Ser	Gly	Ile 460	Tyr	Gly	Asn	Phe	
Gly 465	Gln	Ala	Asn	Tyr 470	Ala	Ala	Ala	Lys	Ala	Ala 475	Ile	Leu	Gly	Phe	Ser 480	
Lys	Thr	Ile	Ala	Leu	Glu	Gly	Ala	Lys	Arg	Gly	Ile	Ile	Val	Asn	Val	

	485		490		495
Ile Ala Pro His	Ala Glu Thr Ala Met Thr Lys Thr Ile Phe Ser Glu				
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Lys Glu Leu Ser Asn His Phe Asp Ala Ser Gln Val Ser Pro Leu Val					
	515		520		525
Val Leu Leu Ala Ser Glu Glu Leu Gln Lys Tyr Ser Gly Arg Arg Val					
	530		535		540
Ile Gly Gln Leu Phe Glu Val Gly Gly Gly Trp Cys Gly Gln Thr Arg					
545		550		555	560
Trp Gln Arg Ser Ser Gly Tyr Val Ser Ile Lys Glu Thr Ile Glu Pro					
	565		570		575
Glu Glu Ile Lys Glu Asn Trp Asn His Ile Thr Asp Phe Ser Arg Asn					
	580		585		590
Thr Ile Asn Pro Ser Ser Thr Glu Glu Ser Ser Met Ala Thr Leu Gln					
	595		600		605
Ala Val Gln Lys Ala His Ser Ser Lys Glu Leu Asp Asp Gly Leu Phe					
	610		615		620
Lys Tyr Thr Thr Lys Asp Cys Ile Leu Tyr Asn Leu Gly Leu Gly Cys					
625		630		635	640
Thr Ser Lys Glu Leu Lys Tyr Thr Tyr Glu Asn Asp Pro Asp Phe Gln					
	645		650		655
Val Leu Pro Thr Phe Ala Val Ile Pro Phe Met Gln Ala Thr Ala Thr					
	660		665		670
Leu Ala Met Asp Asn Leu Val Asp Asn Phe Asn Tyr Ala Met Leu Leu					
	675		680		685
His Gly Glu Gln Tyr Phe Lys Leu Cys Thr Pro Thr Met Pro Ser Asn					
	690		695		700
Gly Thr Leu Lys Thr Leu Ala Lys Pro Leu Gln Val Leu Asp Lys Asn					
705		710		715	720
Gly Lys Ala Ala Leu Val Val Gly Gly Phe Glu Thr Tyr Asp Ile Lys					
	725		730		735
Thr Lys Lys Leu Ile Ala Tyr Asn Glu Gly Ser Phe Phe Ile Arg Gly					
	740		745		750
Ala His Val Pro Pro Glu Lys Glu Val Arg Asp Gly Lys Arg Ala Lys					
	755		760		765
Phe Ala Val Gln Asn Phe Glu Val Pro His Gly Lys Val Pro Asp Phe					
	770		775		780
Glu Ala Glu Ile Ser Thr Asn Lys Asp Gln Ala Ala Leu Tyr Arg Leu					

Gly 145	Arg	Ile	Ile	Asn	Thr 150	Ala	Ser	Pro	Ala	Gly 155	Leu	Phe	Gly	Asn	Phe 160
Gly	Gln	Ala	Asn	Tyr 165	Ser	Ala	Ala	Lys	Met 170	Gly	Leu	Val	Gly	Leu 175	Ala
Glu	Thr	Leu	Ala 180	Lys	Glu	Gly	Ala	Lys 185	Tyr	Asn	Ile	Asn	Val 190	Asn	Ser
Ile	Ala	Pro 195	Leu	Ala	Arg	Ser	Arg 200	Met	Thr	Glu	Asn	Val 205	Leu	Pro	Pro
His	Ile 210	Leu	Lys	Gln	Leu	Gly 215	Pro	Glu	Lys	Ile	Val 220	Pro	Leu	Val	Leu
Tyr 225	Leu	Thr	His	Glu	Ser 230	Thr	Lys	Val	Ser	Asn 235	Ser	Ile	Phe	Glu	Leu 240
Ala	Ala	Gly	Phe	Phe 245	Gly	Gln	Leu	Arg 250	Trp	Glu	Arg	Ser	Ser	Gly 255	Gln
Ile	Phe	Asn 260	Pro	Asp	Pro	Lys	Thr	Tyr 265	Thr	Pro	Glu	Ala	Ile 270	Leu	Asn
Lys	Trp	Lys 275	Glu	Ile	Thr	Asp	Tyr 280	Arg	Asp	Lys	Pro	Phe 285	Asn	Lys	Thr
Gln	His 290	Pro	Tyr	Gln	Leu	Ser 295	Asp	Tyr	Asn	Asp 300	Leu	Ile	Thr	Lys	Ala
Lys 305	Lys	Leu	Pro	Pro	Asn 310	Glu	Gln	Gly	Ser	Val 315	Lys	Ile	Lys	Ser	Leu 320
Cys	Asn	Lys	Val	Val 325	Val	Val	Thr	Gly	Ala 330	Gly	Gly	Gly	Leu	Gly 335	Lys
Ser	His	Ala 340	Ile	Trp	Phe	Ala	Arg	Tyr 345	Gly	Ala	Lys	Val 350	Val	Val	Asn
Asp	Ile	Lys 355	Asp	Pro	Phe	Ser	Val 360	Val	Glu	Glu	Ile	Asn 365	Lys	Leu	Tyr
Gly 370	Glu	Gly	Thr	Ala	Ile	Pro 375	Asp	Ser	His	Asp 380	Val	Val	Thr	Glu	Ala
Pro 385	Leu	Ile	Ile	Gln	Thr 390	Ala	Ile	Ser	Lys	Phe 395	Gln	Arg	Val	Asp	Ile 400
Leu	Val	Asn	Asn	Ala 405	Gly	Ile	Leu	Arg	Asp 410	Lys	Ser	Phe	Leu	Lys 415	Met
Lys	Asp	Glu	Glu 420	Trp	Phe	Ala	Val	Leu 425	Lys	Val	His	Leu	Phe 430	Ser	Thr
Phe	Ser	Leu 435	Ser	Lys	Ala	Val	Trp 440	Pro	Ile	Phe	Thr	Lys 445	Gln	Lys	Ser

Gly	Phe	Ile	Ile	Asn	Thr	Thr	Ser	Thr	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	
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Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala	Ala	Ile	Leu	Gly	Phe	Ser	
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Lys	Thr	Ile	Ala	Leu	Glu	Gly	Ala	Lys	Arg	Gly	Ile	Ile	Val	Asn	Val	
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Ile	Ala	Pro	His	Ala	Glu	Thr	Ala	Met	Thr	Lys	Thr	Ile	Phe	Ser	Glu	
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Lys	Glu	Leu	Ser	Asn	His	Phe	Asp	Ala	Ser	Gln	Val	Ser	Pro	Leu	Val	
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Val	Leu	Leu	Ala	Ser	Glu	Glu	Leu	Gln	Lys	Tyr	Ser	Gly	Arg	Arg	Val	
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Ile	Gly	Gln	Leu	Phe	Glu	Val	Gly	Gly	Gly	Trp	Cys	Gly	Gln	Thr	Arg	
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Trp	Gln	Arg	Ser	Ser	Gly	Tyr	Val	Ser	Ile	Lys	Glu	Thr	Ile	Glu	Pro	
				565					570					575		
Glu	Glu	Ile	Lys	Glu	Asn	Trp	Asn	His	Ile	Thr	Asp	Phe	Ser	Arg	Asn	
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Thr	Ile	Asn	Pro	Ser	Ser	Thr	Glu	Glu	Ser	Ser	Met	Ala	Thr	Leu	Gln	
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Ala	Val	Gln	Lys	Ala	His	Ser	Ser	Lys	Glu	Leu	Asp	Asp	Gly	Leu	Phe	
	610					615					620					
Lys	Tyr	Thr	Thr	Lys	Asp	Cys	Ile	Leu	Tyr	Asn	Leu	Gly	Leu	Gly	Cys	
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Thr	Ser	Lys	Glu	Leu	Lys	Tyr	Thr	Tyr	Glu	Asn	Asp	Pro	Asp	Phe	Gln	
			645						650					655		
Val	Leu	Pro	Thr	Phe	Ala	Val	Ile	Pro	Phe	Met	Gln	Ala	Thr	Ala	Thr	
			660					665					670			
Leu	Ala	Met	Asp	Asn	Leu	Val	Asp	Asn	Phe	Asn	Tyr	Ala	Met	Leu	Leu	
		675					680					685				
His	Gly	Glu	Gln	Tyr	Phe	Lys	Leu	Cys	Thr	Pro	Thr	Met	Pro	Ser	Asn	
	690					695					700					
Gly	Thr	Leu	Lys	Thr	Leu	Ala	Lys	Pro	Leu	Gln	Val	Leu	Asp	Lys	Asn	
705					710					715					720	
Gly	Lys	Ala	Ala	Leu	Val	Val	Gly	Gly	Phe	Glu	Thr	Tyr	Asp	Ile	Lys	
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Thr	Lys	Lys	Leu	Ile	Ala	Tyr	Asn	Glu	Gly	Ser	Phe	Phe	Ile	Arg	Gly	
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Ala His Val Pro Pro Glu Lys Glu Val Arg Asp Gly Lys Arg Ala Lys
755 760 765

Phe Ala Val Gln Asn Phe Glu Val Pro His Gly Lys Val Pro Asp Phe
770 775 780

Glu Ala Glu Ile Ser Thr Asn Lys Asp Gln Ala Ala Leu Tyr Arg Leu
785 790 795 800

Ser Gly Asp Phe Asn Pro Leu His Ile Asp Pro Thr Leu Ala Lys Ala
805 810 815

Val Lys Phe Pro Thr Pro Ile Leu His Gly Leu Cys Thr Leu Gly Ile
820 825 830

Ser Ala Lys Ala Leu Phe Glu His Tyr Gly Pro Tyr Glu Glu Leu Lys
835 840 845

Val Arg Phe Thr Asn Val Val Phe Pro Gly Asp Thr Leu Lys Val Lys
850 855 860

Ala Trp Lys Gln Gly Ser Val Val Val Phe Gln Thr Ile Asp Thr Thr
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Lys Ser Lys Leu
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Gly Ala Lys Val Val Val Asn Asp Leu Gly Gly Thr Leu Gly Gly Ser
35 40 45

Gly His Asn Ser Lys Ala Ala Asp Leu Val Val Asp Glu Ile Lys Lys
50 55 60

Ala Gly Gly Ile Ala Val Ala Asn Tyr Asp Ser Val Asn Glu Asn Gly
65 70 75 80

Glu Lys Ile Ile Glu Thr Ala Ile Lys Glu Phe Gly Arg Val Asp Val
85 90 95

Leu Ile Asn Asn Ala Gly Ile Leu Arg Asp Val Ser Phe Ala Lys Met
100 105 110

Lys	Asp	Glu	Glu	Trp	Phe	Ala	Val	Leu	Lys	Val	His	Leu	Phe	Ser	Thr	420	425	430
Phe	Ser	Leu	Ser	Lys	Ala	Val	Trp	Pro	Ile	Phe	Thr	Lys	Gln	Lys	Ser	435	440	445
Gly	Phe	Ile	Ile	Asn	Thr	Thr	Ser	Thr	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	450	455	460
Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Lys	Ala	Ala	Ile	Leu	Gly	Phe	Ser	465	470	475
Lys	Thr	Ile	Ala	Leu	Glu	Gly	Ala	Lys	Arg	Gly	Ile	Ile	Val	Asn	Val	485	490	495
Ile	Ala	Pro	His	Ala	Glu	Thr	Ala	Met	Thr	Lys	Thr	Ile	Phe	Ser	Glu	500	505	510
Lys	Glu	Leu	Ser	Asn	His	Phe	Asp	Ala	Ser	Gln	Val	Ser	Pro	Leu	Val	515	520	525
Val	Leu	Leu	Ala	Ser	Glu	Glu	Leu	Gln	Lys	Tyr	Ser	Gly	Arg	Arg	Val	530	535	540
Ile	Gly	Gln	Leu	Phe	Glu	Val	Gly	Gly	Gly	Trp	Cys	Gly	Gln	Thr	Arg	545	550	555
Trp	Gln	Arg	Ser	Ser	Gly	Tyr	Val	Ser	Ile	Lys	Glu	Thr	Ile	Glu	Pro	565	570	575
Glu	Glu	Ile	Lys	Glu	Asn	Trp	Asn	His	Ile	Thr	Asp	Phe	Ser	Arg	Asn	580	585	590
Thr	Ile	Asn	Pro	Ser	Ser	Thr	Glu	Glu	Ser	Ser	Met	Ala	Thr	Leu	Gln	595	600	605
Ala	Val	Gln	Lys	Ala	His	Ser	Ser	Lys	Glu	Leu	Asp	Asp	Gly	Leu	Phe	610	615	620
Lys	Tyr	Thr	Thr	Lys	Asp	Cys	Ile	Leu	Tyr	Asn	Leu	Gly	Leu	Gly	Cys	625	630	635
Thr	Ser	Lys	Glu	Leu	Lys	Tyr	Thr	Tyr	Glu	Asn	Asp	Pro	Asp	Phe	Gln	645	650	655
Val	Leu	Pro	Thr	Phe	Ala	Val	Ile	Pro	Phe	Met	Gln	Ala	Thr	Ala	Thr	660	665	670
Leu	Ala	Met	Asp	Asn	Leu	Val	Asp	Asn	Phe	Asn	Tyr	Ala	Met	Leu	Leu	675	680	685
His	Gly	Glu	Gln	Tyr	Phe	Lys	Leu	Cys	Thr	Pro	Thr	Met	Pro	Ser	Asn	690	695	700
Gly	Thr	Leu	Lys	Thr	Leu	Ala	Lys	Pro	Leu	Gln	Val	Leu	Asp	Lys	Asn	705	710	715

Gly Lys Ala Ala Leu Val Val Gly Gly Phe Glu Thr Tyr Asp Ile Lys
725 730 735

Thr Lys Lys Leu Ile Ala Tyr Asn Glu Gly Ser Phe Phe Ile Arg Gly
740 745 750

Ala His Val Pro Pro Glu Lys Glu Val Arg Asp Gly Lys Arg Ala Lys
755 760 765

Phe Ala Val Gln Asn Phe Glu Val Pro His Gly Lys Val Pro Asp Phe
770 775 780

Glu Ala Glu Ile Ser Thr Asn Lys Asp Gln Ala Ala Leu Tyr Arg Leu
785 790 795 800

Ser Gly Asp Phe Asn Pro Leu His Ile Asp Pro Thr Leu Ala Lys Ala
805 810 815

Val Lys Phe Pro Thr Pro Ile Leu His Gly Leu Cys Thr Leu Gly Ile
820 825 830

Ser Ala Lys Ala Leu Phe Glu His Tyr Gly Pro Tyr Glu Glu Leu Lys
835 840 845

Val Arg Phe Thr Asn Val Val Phe Pro Gly Asp Thr Leu Lys Val Lys
850 855 860

Ala Trp Lys Gln Gly Ser Val Val Val Phe Gln Thr Ile Asp Thr Thr
865 870 875 880

Arg Asn Val Ile Val Leu Asp Asn Ala Ala Val Lys Leu Ser Gln Ala
885 890 895

Lys Ser Lys Leu
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<210> 18
<211> 900
<212> PRT
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Gly Ala Lys Val Val Val Asn Asp Leu Gly Gly Thr Leu Gly Gly Ser
35 40 45

Gly His Asn Ser Lys Ala Ala Asp Leu Val Val Asp Glu Ile Lys Lys
50 55 60

Ala Gly Gly Ile Ala Val Ala Asn Tyr Asp Ser Val Asn Glu Asn Gly

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Leu	Ile	Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Val	Ser	Phe	Ala	Lys	Met	
				100					105					110		
Thr	Glu	Arg	Glu	Phe	Ala	Ser	Val	Val	Asp	Val	His	Leu	Thr	Gly	Gly	
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Tyr	Lys	Leu	Ser	Arg	Ala	Ala	Trp	Pro	Tyr	Met	Arg	Ser	Gln	Lys	Phe	
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Gly	Arg	Ile	Ile	Asn	Thr	Ala	Ser	Pro	Ala	Gly	Leu	Phe	Gly	Asn	Phe	
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Gly	Gln	Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Met	Gly	Leu	Val	Gly	Leu	Ala	
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Glu	Thr	Leu	Ala	Lys	Glu	Gly	Ala	Lys	Tyr	Asn	Ile	Asn	Val	Asn	Ser	
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Ile	Ala	Pro	Leu	Ala	Arg	Ser	Arg	Met	Thr	Glu	Asn	Val	Leu	Pro	Pro	
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His	Ile	Leu	Lys	Gln	Leu	Gly	Pro	Glu	Lys	Ile	Val	Pro	Leu	Val	Leu	
				210					215					220		
Tyr	Leu	Thr	His	Glu	Ser	Thr	Lys	Val	Ser	Asn	Ser	Ile	Phe	Glu	Leu	
				225					230					235		
Ala	Ala	Gly	Phe	Phe	Gly	Gln	Leu	Arg	Trp	Glu	Arg	Ser	Ser	Gly	Gln	
				245					250					255		
Ile	Phe	Asn	Pro	Asp	Pro	Lys	Thr	Tyr	Thr	Pro	Glu	Ala	Ile	Leu	Asn	
				260					265					270		
Lys	Trp	Lys	Glu	Ile	Thr	Asp	Tyr	Arg	Asp	Lys	Pro	Phe	Asn	Lys	Thr	
				275					280					285		
Gln	His	Pro	Tyr	Gln	Leu	Ser	Asp	Tyr	Asn	Asp	Leu	Ile	Thr	Lys	Ala	
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Lys	Lys	Leu	Pro	Pro	Asn	Glu	Gln	Gly	Ser	Val	Lys	Ile	Lys	Ser	Leu	
				305					310					315		
Cys	Asn	Lys	Val	Val	Val	Val	Thr	Ser	Ala	Gly	Gly	Gly	Leu	Gly	Lys	
				325					330					335		
Ser	His	Ala	Ile	Trp	Phe	Ala	Arg	Tyr	Gly	Ala	Lys	Val	Val	Val	Asn	
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Asp	Ile	Lys	Asp	Pro	Phe	Ser	Val	Val	Glu	Glu	Ile	Asn	Lys	Leu	Tyr	
				355					360					365		
Gly	Glu	Gly	Thr	Ala	Ile	Pro	Asp	Ser	His	Asp	Val	Val	Thr	Glu	Ala	

10060330 080900

370		375		380
Pro Leu Ile Ile Gln Thr Ala Ile Ser Lys Phe Gln Arg Val Asp Ile				
385		390		395 400
Leu Val Asn Asn Ala Gly Ile Leu Arg Asp Lys Ser Phe Leu Lys Met				
	405		410	415
Lys Asp Glu Glu Trp Phe Ala Val Leu Lys Val His Leu Phe Ser Thr				
	420		425	430
Phe Ser Leu Ser Lys Ala Val Trp Pro Ile Phe Thr Lys Gln Lys Ser				
	435		440	445
Gly Phe Ile Ile Asn Thr Thr Ser Thr Ser Gly Ile Tyr Gly Asn Phe				
	450		455	460
Gly Gln Ala Asn Tyr Ala Ala Ala Lys Ala Ala Ile Leu Gly Phe Ser				
	465		470	475 480
Lys Thr Ile Ala Leu Glu Gly Ala Lys Arg Gly Ile Ile Val Asn Val				
	485		490	495
Ile Ala Pro His Ala Glu Thr Ala Met Thr Lys Thr Ile Phe Ser Glu				
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Lys Glu Leu Ser Asn His Phe Asp Ala Ser Gln Val Ser Pro Leu Val				
	515		520	525
Val Leu Leu Ala Ser Glu Glu Leu Gln Lys Tyr Ser Gly Arg Arg Val				
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Ile Gly Gln Leu Phe Glu Val Gly Gly Gly Trp Cys Gly Gln Thr Arg				
	545		550	555 560
Trp Gln Arg Ser Ser Gly Tyr Val Ser Ile Lys Glu Thr Ile Glu Pro				
	565		570	575
Glu Glu Ile Lys Glu Asn Trp Asn His Ile Thr Asp Phe Ser Arg Asn				
	580		585	590
Thr Ile Asn Pro Ser Ser Thr Glu Glu Ser Ser Met Ala Thr Leu Gln				
	595		600	605
Ala Val Gln Lys Ala His Ser Ser Lys Glu Leu Asp Asp Gly Leu Phe				
	610		615	620
Lys Tyr Thr Thr Lys Asp Cys Ile Leu Tyr Asn Leu Gly Leu Gly Cys				
	625		630	635 640
Thr Ser Lys Glu Leu Lys Tyr Thr Tyr Glu Asn Asp Pro Asp Phe Gln				
	645		650	655
Val Leu Pro Thr Phe Ala Val Ile Pro Phe Met Gln Ala Thr Ala Thr				
	660		665	670
Leu Ala Met Asp Asn Leu Val Asp Asn Phe Asn Tyr Ala Met Leu Leu				

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675	680	685
His Gly Glu Gln Tyr Phe Lys Leu Cys Thr Pro Thr Met Pro Ser Asn 690 695 700		
Gly Thr Leu Lys Thr Leu Ala Lys Pro Leu Gln Val Leu Asp Lys Asn 705 710 715 720		
Gly Lys Ala Ala Leu Val Val Gly Gly Phe Glu Thr Tyr Asp Ile Lys 725 730 735		
Thr Lys Lys Leu Ile Ala Tyr Asn Glu Gly Ser Phe Phe Ile Arg Gly 740 745 750		
Ala His Val Pro Pro Glu Lys Glu Val Arg Asp Gly Lys Arg Ala Lys 755 760 765		
Phe Ala Val Gln Asn Phe Glu Val Pro His Gly Lys Val Pro Asp Phe 770 775 780		
Glu Ala Glu Ile Ser Thr Asn Lys Asp Gln Ala Ala Leu Tyr Arg Leu 785 790 795 800		
Ser Gly Asp Phe Asn Pro Leu His Ile Asp Pro Thr Leu Ala Lys Ala 805 810 815		
Val Lys Phe Pro Thr Pro Ile Leu His Gly Leu Cys Thr Leu Gly Ile 820 825 830		
Ser Ala Lys Ala Leu Phe Glu His Tyr Gly Pro Tyr Glu Glu Leu Lys 835 840 845		
Val Arg Phe Thr Asn Val Val Phe Pro Gly Asp Thr Leu Lys Val Lys 850 855 860		
Ala Trp Lys Gln Gly Ser Val Val Val Phe Gln Thr Ile Asp Thr Thr 865 870 875 880		
Arg Asn Val Ile Val Leu Asp Asn Ala Ala Val Lys Leu Ser Gln Ala 885 890 895		
Lys Ser Lys Leu 900		

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 <213> Candida tropicalis

<400> 19
 Met Ser Pro Val Asp Phe Lys Asp Lys Val Val Ile Ile Thr Gly Ala
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 Gly Gly Gly Leu Gly Lys Tyr Tyr Ser Leu Glu Phe Ala Lys Leu Gly
 20 25 30

Ala	Lys	Val	Val	Val	Asn	Asp	Leu	Gly	Gly	Ala	Leu	Asn	Gly	Gln	Gly		
	35						40					45					
Gly	Asn	Ser	Lys	Ala	Ala	Asp	Val	Val	Val	Asp	Glu	Ile	Val	Lys	Asn		
	50					55					60						
Gly	Gly	Val	Ala	Val	Ala	Asp	Tyr	Asn	Asn	Val	Leu	Asp	Gly	Asp	Lys		
	65				70					75					80		
Ile	Val	Glu	Thr	Ala	Val	Lys	Asn	Phe	Gly	Thr	Val	His	Val	Ile	Ile		
				85					90					95			
Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Ala	Ser	Met	Lys	Lys	Met	Thr	Glu		
		100						105					110				
Lys	Asp	Tyr	Lys	Leu	Val	Ile	Asp	Val	His	Leu	Asn	Gly	Ala	Phe	Ala		
	115						120					125					
Val	Thr	Lys	Ala	Ala	Trp	Pro	Tyr	Phe	Gln	Lys	Gln	Lys	Tyr	Gly	Arg		
	130					135					140						
Ile	Val	Asn	Thr	Ser	Ser	Pro	Ala	Gly	Leu	Tyr	Gly	Asn	Phe	Gly	Gln		
	145				150					155					160		
Ala	Asn	Tyr	Ala	Ser	Ala	Lys	Ser	Ala	Leu	Leu	Gly	Phe	Ala	Glu	Thr		
				165					170					175			
Leu	Ala	Lys	Glu	Gly	Ala	Lys	Tyr	Asn	Ile	Lys	Ala	Asn	Ala	Ile	Ala		
		180						185					190				
Pro	Leu	Ala	Arg	Ser	Arg	Met	Thr	Glu	Ser	Ile	Leu	Pro	Pro	Pro	Met		
	195					200						205					
Leu	Glu	Lys	Leu	Gly	Pro	Glu	Lys	Val	Ala	Pro	Leu	Val	Leu	Tyr	Leu		
	210					215					220						
Ser	Ser	Ala	Glu	Asn	Glu	Leu	Thr	Gly	Gln	Phe	Phe	Glu	Val	Ala	Ala		
	225				230				235					240			
Gly	Phe	Tyr	Ala	Gln	Ile	Arg	Trp	Glu	Arg	Ser	Gly	Gly	Val	Leu	Phe		
				245					250					255			
Lys	Pro	Asp	Gln	Ser	Phe	Thr	Ala	Glu	Val	Val	Ala	Lys	Arg	Phe	Ser		
		260						265					270				
Glu	Ile	Leu	Asp	Tyr	Asp	Asp	Ser	Arg	Lys	Pro	Glu	Tyr	Leu	Lys	Asn		
	275					280						285					
Gln	Tyr	Pro	Phe	Met	Leu	Asn	Asp	Tyr	Ala	Thr	Leu	Thr	Asn	Glu	Ala		
	290					295					300						
Arg	Lys	Leu	Pro	Ala	Asn	Asp	Ala	Ser	Gly	Ala	Pro	Thr	Val	Ser	Leu		
	305				310					315					320		
Lys	Asp	Lys	Val	Val	Leu	Ile	Thr	Gly	Ala	Gly	Ala	Gly	Leu	Gly	Lys		
				325					330					335			

Glu	Tyr	Ala	Lys	Trp	Phe	Ala	Lys	Tyr	Gly	Ala	Lys	Val	Val	Val	Asn	
			340					345					350			
Asp	Phe	Lys	Asp	Ala	Thr	Lys	Thr	Val	Asp	Glu	Ile	Lys	Ala	Ala	Gly	
		355					360					365				
Gly	Glu	Ala	Trp	Pro	Asp	Gln	His	Asp	Val	Ala	Lys	Asp	Ser	Glu	Ala	
	370					375					380					
Ile	Ile	Lys	Asn	Val	Ile	Asp	Lys	Tyr	Gly	Thr	Ile	Asp	Ile	Leu	Val	
385					390					395					400	
Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Arg	Ser	Phe	Ala	Lys	Met	Ser	Lys	
				405					410					415		
Gln	Glu	Trp	Asp	Ser	Val	Gln	Gln	Val	His	Leu	Ile	Gly	Thr	Phe	Asn	
			420					425					430			
Leu	Ser	Arg	Leu	Ala	Trp	Pro	Tyr	Phe	Val	Glu	Lys	Gln	Phe	Gly	Arg	
		435					440					445				
Ile	Ile	Asn	Ile	Thr	Ser	Thr	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	Gly	Gln	
	450					455					460					
Ala	Asn	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Ile	Leu	Gly	Leu	Ser	Lys	Thr	
465					470					475					480	
Met	Ala	Ile	Glu	Gly	Ala	Lys	Asn	Asn	Ile	Lys	Val	Asn	Ile	Val	Ala	
				485					490					495		
Pro	His	Ala	Glu	Thr	Ala	Met	Thr	Leu	Thr	Ile	Phe	Arg	Glu	Gln	Asp	
			500					505					510			
Lys	Asn	Leu	Tyr	His	Ala	Asp	Gln	Val	Ala	Pro	Leu	Leu	Val	Tyr	Leu	
		515					520					525				
Gly	Thr	Asp	Asp	Val	Pro	Val	Thr	Gly	Glu	Thr	Phe	Glu	Ile	Gly	Gly	
	530					535					540					
Gly	Trp	Ile	Gly	Asn	Thr	Arg	Trp	Gln	Arg	Ala	Lys	Gly	Ala	Val	Ser	
545					550					555					560	
His	Asp	Glu	His	Thr	Thr	Val	Glu	Phe	Ile	Lys	Glu	His	Leu	Asn	Glu	
				565					570					575		
Ile	Thr	Asp	Phe	Thr	Thr	Asp	Thr	Glu	Asn	Pro	Lys	Ser	Thr	Thr	Glu	
			580					585					590			
Ser	Ser	Met	Ala	Ile	Leu	Ser	Ala	Val	Gly	Gly	Asp	Asp	Asp	Asp	Asp	
		595					600					605				
Asp	Glu	Asp	Glu	Glu	Glu	Asp	Glu	Gly	Asp	Glu	Glu	Glu	Asp	Glu	Glu	
	610					615					620					
Asp	Glu	Glu	Glu	Asp	Asp	Pro	Val	Trp	Arg	Phe	Asp	Asp	Arg	Asp	Val	
625					630					635					640	

Ile	Leu	Tyr	Asn	Ile	Ala	Leu	Gly	Ala	Thr	Thr	Lys	Gln	Leu	Lys	Tyr	
				645					650					655		
Val	Tyr	Glu	Asn	Asp	Ser	Asp	Phe	Gln	Val	Ile	Pro	Thr	Phe	Gly	His	
			660					665					670			
Leu	Ile	Thr	Phe	Asn	Ser	Gly	Lys	Ser	Gln	Asn	Ser	Phe	Ala	Lys	Leu	
		675					680					685				
Leu	Arg	Asn	Phe	Asn	Pro	Met	Leu	Leu	Leu	His	Gly	Glu	His	Tyr	Leu	
	690					695					700					
Lys	Val	His	Ser	Trp	Pro	Pro	Pro	Thr	Glu	Gly	Glu	Ile	Lys	Thr	Thr	
705					710					715					720	
Phe	Glu	Pro	Ile	Ala	Thr	Thr	Pro	Lys	Gly	Thr	Asn	Val	Val	Ile	Val	
				725					730					735		
His	Gly	Ser	Lys	Ser	Val	Asp	Asn	Lys	Ser	Gly	Glu	Leu	Ile	Tyr	Ser	
			740					745					750			
Asn	Glu	Ala	Thr	Tyr	Phe	Ile	Arg	Asn	Cys	Gln	Ala	Asp	Asn	Lys	Val	
		755					760					765				
Tyr	Ala	Asp	Arg	Pro	Ala	Phe	Ala	Thr	Asn	Gln	Phe	Leu	Ala	Pro	Lys	
	770					775					780					
Arg	Ala	Pro	Asp	Tyr	Gln	Val	Asp	Val	Pro	Val	Ser	Glu	Asp	Leu	Ala	
785					790					795					800	
Ala	Leu	Tyr	Arg	Leu	Ser	Gly	Asp	Arg	Asn	Pro	Leu	His	Ile	Asp	Pro	
			805						810					815		
Asn	Phe	Ala	Lys	Gly	Ala	Lys	Phe	Pro	Lys	Pro	Ile	Leu	His	Gly	Met	
			820					825					830			
Cys	Thr	Tyr	Gly	Leu	Ser	Ala	Lys	Ala	Leu	Ile	Asp	Lys	Phe	Gly	Met	
		835					840					845				
Phe	Asn	Glu	Ile	Lys	Ala	Arg	Phe	Thr	Gly	Ile	Val	Phe	Pro	Gly	Glu	
	850					855					860					
Thr	Leu	Arg	Val	Leu	Ala	Trp	Lys	Glu	Ser	Asp	Asp	Thr	Ile	Val	Phe	
865					870					875					880	
Gln	Thr	His	Val	Val	Asp	Arg	Gly	Thr	Ile	Ala	Ile	Asn	Asn	Ala	Ala	
			885						890					895		
Ile	Lys	Leu	Val	Gly	Asp	Lys	Ala	Lys	Ile							
		900						905								

<210> 20
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 <212> PRT
 <213> Candida tropicalis

Variable	Mean	SD	Min	Max
Age	34.5	4.5	25	45
Gender	0.5	0.5	0	1
Marital status	0.5	0.5	0	1
Education	12.5	1.5	10	15
Income	1500	500	1000	2000
Health status	0.5	0.5	0	1
Smoking status	0.5	0.5	0	1
Alcohol consumption	0.5	0.5	0	1
Exercise frequency	0.5	0.5	0	1
Stress level	0.5	0.5	0	1
Life satisfaction	0.5	0.5	0	1
Work satisfaction	0.5	0.5	0	1
Family satisfaction	0.5	0.5	0	1
Community satisfaction	0.5	0.5	0	1
Overall satisfaction	0.5	0.5	0	1

20

Arg 305	Lys	Leu	Pro	Ala	Asn 310	Asp	Ala	Ser	Gly	Ala 315	Pro	Thr	Val	Ser	Leu 320
Lys	Asp	Lys	Val	Val 325	Leu	Ile	Thr	Gly	Ala 330	Gly	Ala	Gly	Leu	Gly	Lys 335
Glu	Tyr	Ala	Lys 340	Trp	Phe	Ala	Lys	Tyr 345	Gly	Ala	Lys	Val	Val 350	Val	Asn 355
Asp	Phe	Lys 355	Asp	Ala	Thr	Lys	Thr 360	Val	Asp	Glu	Ile	Lys 365	Ala	Ala	Gly 370
Gly	Glu 370	Ala	Trp	Pro	Asp	Gln 375	His	Asp	Val	Ala	Lys 380	Asp	Ser	Glu	Ala 385
Ile 385	Ile	Lys	Asn	Val 390	Ile	Asp	Lys	Tyr	Gly	Thr 395	Ile	Asp	Ile	Leu	Val 400
Asn	Asn	Ala	Gly 405	Ile	Leu	Arg	Asp	Arg	Ser 410	Phe	Ala	Lys	Met 415	Ser	Lys 420
Gln	Glu	Trp	Asp 420	Ser	Val	Gln	Gln	Val 425	His	Leu	Ile	Gly	Thr 430	Phe	Asn 435
Leu	Ser	Arg 435	Leu	Ala	Trp	Pro	Tyr 440	Phe	Val	Glu	Lys	Gln 445	Phe	Gly	Arg 450
Ile 450	Ile	Asn	Ile	Thr	Ser	Thr 455	Ser	Gly	Ile	Tyr	Gly 460	Asn	Phe	Gly	Gln 465
Ala 465	Asn	Tyr	Ser	Ser	Ser 470	Lys	Ala	Gly	Ile	Leu 475	Gly	Leu	Ser	Lys	Thr 480
Met	Ala	Ile	Glu	Gly 485	Ala	Lys	Asn	Asn	Ile 490	Lys	Val	Asn	Ile	Val 495	Ala 500
Pro	His	Ala	Glu 500	Thr	Ala	Met	Thr	Leu 505	Thr	Ile	Phe	Arg	Glu 510	Gln	Asp 515
Lys	Asn	Leu 515	Tyr	His	Ala	Asp	Gln 520	Val	Ala	Pro	Leu	Leu 525	Val	Tyr	Leu 530
Gly 530	Thr	Asp	Asp	Val	Pro	Val 535	Thr	Gly	Glu	Thr	Phe 540	Glu	Ile	Gly	Gly 545
Gly 545	Trp	Ile	Gly	Asn 550	Thr	Arg	Trp	Gln	Arg	Ala 555	Lys	Gly	Ala	Val	Ser 560
His	Asp	Glu	His	Thr 565	Thr	Val	Glu	Phe	Ile 570	Lys	Glu	His	Leu	Asn 575	Glu 580
Ile	Thr	Asp	Phe 580	Thr	Thr	Asp	Thr	Glu 585	Asn	Pro	Lys	Ser	Thr 590	Thr	Glu 595
Ser	Ser	Met 595	Ala	Ile	Leu	Ser	Ala 600	Val	Gly	Gly	Asp	Asp 605	Asp	Asp	Asp 610

Asp	Glu	Asp	Glu	Glu	Glu	Asp	Glu	Gly	Asp	Glu	Glu	Glu	Asp	Glu	Glu		
610						615					620						
Asp	Glu	Glu	Glu	Asp	Asp	Pro	Val	Trp	Arg	Phe	Asp	Asp	Arg	Asp	Val		
625				630						635					640		
Ile	Leu	Tyr	Asn	Ile	Ala	Leu	Gly	Ala	Thr	Thr	Lys	Gln	Leu	Lys	Tyr		
			645						650					655			
Val	Tyr	Glu	Asn	Asp	Ser	Asp	Phe	Gln	Val	Ile	Pro	Thr	Phe	Gly	His		
			660					665					670				
Leu	Ile	Thr	Phe	Asn	Ser	Gly	Lys	Ser	Gln	Asn	Ser	Phe	Ala	Lys	Leu		
		675					680					685					
Leu	Arg	Asn	Phe	Asn	Pro	Met	Leu	Leu	Leu	His	Gly	Glu	His	Tyr	Leu		
	690					695					700						
Lys	Val	His	Ser	Trp	Pro	Pro	Pro	Thr	Glu	Gly	Glu	Ile	Lys	Thr	Thr		
705					710					715					720		
Phe	Glu	Pro	Ile	Ala	Thr	Thr	Pro	Lys	Gly	Thr	Asn	Val	Val	Ile	Val		
			725						730					735			
His	Gly	Ser	Lys	Ser	Val	Asp	Asn	Lys	Ser	Gly	Glu	Leu	Ile	Tyr	Ser		
			740					745					750				
Asn	Glu	Ala	Thr	Tyr	Phe	Ile	Arg	Asn	Cys	Gln	Ala	Asp	Asn	Lys	Val		
		755					760					765					
Tyr	Ala	Asp	Arg	Pro	Ala	Phe	Ala	Thr	Asn	Gln	Phe	Leu	Ala	Pro	Lys		
	770					775					780						
Arg	Ala	Pro	Asp	Tyr	Gln	Val	Asp	Val	Pro	Val	Ser	Glu	Asp	Leu	Ala		
785					790					795					800		
Ala	Leu	Tyr	Arg	Leu	Ser	Gly	Asp	Arg	Asn	Pro	Leu	His	Ile	Asp	Pro		
			805						810					815			
Asn	Phe	Ala	Lys	Gly	Ala	Lys	Phe	Pro	Lys	Pro	Ile	Leu	His	Gly	Met		
			820					825					830				
Cys	Thr	Tyr	Gly	Leu	Ser	Ala	Lys	Ala	Leu	Ile	Asp	Lys	Phe	Gly	Met		
		835					840					845					
Phe	Asn	Glu	Ile	Lys	Ala	Arg	Phe	Thr	Gly	Ile	Val	Phe	Pro	Gly	Glu		
	850					855					860						
Thr	Leu	Arg	Val	Leu	Ala	Trp	Lys	Glu	Ser	Asp	Asp	Thr	Ile	Val	Phe		
865					870					875					880		
Gln	Thr	His	Val	Val	Asp	Arg	Gly	Thr	Ile	Ala	Ile	Asn	Asn	Ala	Ala		
			885						890					895			
Ile	Lys	Leu	Val	Gly	Asp	Lys	Ala	Lys	Ile								
		900						905									

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<400> 21

Met	Ser	Pro	Val	Asp	Phe	Lys	Asp	Lys	Val	Val	Ile	Ile	Thr	Gly	Ala
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Gly	Gly	Gly	Leu	Gly	Lys	Tyr	Tyr	Ser	Leu	Glu	Phe	Ala	Lys	Leu	Gly
			20					25					30		
Ala	Lys	Val	Val	Val	Asn	Asp	Leu	Gly	Gly	Ala	Leu	Asn	Gly	Gln	Gly
		35					40					45			
Gly	Asn	Ser	Lys	Ala	Ala	Asp	Val	Val	Val	Asp	Glu	Ile	Val	Lys	Asn
	50					55					60				
Gly	Gly	Val	Ala	Val	Ala	Asp	Tyr	Asn	Asn	Val	Leu	Asp	Gly	Asp	Lys
65					70					75					80
Ile	Val	Glu	Thr	Ala	Val	Lys	Asn	Phe	Gly	Thr	Val	His	Val	Ile	Ile
				85					90					95	
Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Ala	Ser	Met	Lys	Lys	Met	Thr	Glu
			100					105					110		
Lys	Asp	Tyr	Lys	Leu	Val	Ile	Asp	Val	His	Leu	Asn	Gly	Ala	Phe	Ala
	115						120					125			
Val	Thr	Lys	Ala	Ala	Trp	Pro	Tyr	Phe	Gln	Lys	Gln	Lys	Tyr	Gly	Arg
	130					135					140				
Ile	Val	Asn	Thr	Ser	Ser	Pro	Ala	Gly	Leu	Tyr	Gly	Asn	Phe	Gly	Gln
145					150				155						160
Ala	Asn	Tyr	Ala	Ser	Ala	Lys	Ser	Ala	Leu	Leu	Gly	Phe	Ala	Glu	Thr
				165					170					175	
Leu	Ala	Lys	Glu	Gly	Ala	Lys	Tyr	Asn	Ile	Lys	Ala	Asn	Ala	Ile	Ala
			180					185					190		
Pro	Leu	Ala	Arg	Ser	Arg	Met	Thr	Glu	Ser	Ile	Leu	Pro	Pro	Pro	Met
	195					200						205			
Leu	Glu	Lys	Leu	Gly	Pro	Glu	Lys	Val	Ala	Pro	Leu	Val	Leu	Tyr	Leu
	210					215					220				
Ser	Ser	Ala	Glu	Asn	Glu	Leu	Thr	Gly	Gln	Phe	Phe	Glu	Val	Ala	Ala
225					230					235					240
Gly	Phe	Tyr	Ala	Gln	Ile	Arg	Trp	Glu	Arg	Ser	Gly	Gly	Val	Leu	Phe
			245						250					255	
Lys	Pro	Asp	Gln	Ser	Phe	Thr	Ala	Glu	Val	Val	Ala	Lys	Arg	Phe	Ser

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260										265										270										
Glu	Ile	Leu	Asp	Tyr	Asp	Asp	Ser	Arg	Lys	Pro	Glu	Tyr	Leu	Lys	Asn															
		275					280						285																	
Gln	Tyr	Pro	Phe	Met	Leu	Asn	Asp	Tyr	Ala	Thr	Leu	Thr	Asn	Glu	Ala															
	290					295					300																			
Arg	Lys	Leu	Pro	Ala	Asn	Asp	Ala	Ser	Gly	Ala	Pro	Thr	Val	Ser	Leu															
305					310					315					320															
Lys	Asp	Lys	Val	Val	Leu	Ile	Thr	Ser	Ala	Gly	Ala	Gly	Leu	Gly	Lys															
				325					330					335																
Glu	Tyr	Ala	Lys	Trp	Phe	Ala	Lys	Tyr	Gly	Ala	Lys	Val	Val	Val	Asn															
			340					345					350																	
Asp	Phe	Lys	Asp	Ala	Thr	Lys	Thr	Val	Asp	Glu	Ile	Lys	Ala	Ala	Gly															
		355					360					365																		
Gly	Glu	Ala	Trp	Pro	Asp	Gln	His	Asp	Val	Ala	Lys	Asp	Ser	Glu	Ala															
	370					375					380																			
Ile	Ile	Lys	Asn	Val	Ile	Asp	Lys	Tyr	Gly	Thr	Ile	Asp	Ile	Leu	Val															
385					390					395				400																
Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Arg	Ser	Phe	Ala	Lys	Met	Ser	Lys															
				405					410				415																	
Gln	Glu	Trp	Asp	Ser	Val	Gln	Gln	Val	His	Leu	Ile	Gly	Thr	Phe	Asn															
			420					425				430																		
Leu	Ser	Arg	Leu	Ala	Trp	Pro	Tyr	Phe	Val	Glu	Lys	Gln	Phe	Gly	Arg															
		435					440					445																		
Ile	Ile	Asn	Ile	Thr	Ser	Thr	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	Gly	Gln															
450						455					460																			
Ala	Asn	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Ile	Leu	Gly	Leu	Ser	Lys	Thr															
465					470					475				480																
Met	Ala	Ile	Glu	Gly	Ala	Lys	Asn	Asn	Ile	Lys	Val	Asn	Ile	Val	Ala															
				485					490				495																	
Pro	His	Ala	Glu	Thr	Ala	Met	Thr	Leu	Thr	Ile	Phe	Arg	Glu	Gln	Asp															
			500					505				510																		
Lys	Asn	Leu	Tyr	His	Ala	Asp	Gln	Val	Ala	Pro	Leu	Leu	Val	Tyr	Leu															
		515					520					525																		
Gly	Thr	Asp	Asp	Val	Pro	Val	Thr	Gly	Glu	Thr	Phe	Glu	Ile	Gly	Gly															
	530					535					540																			
Gly	Trp	Ile	Gly	Asn	Thr	Arg	Trp	Gln	Arg	Ala	Lys	Gly	Ala	Val	Ser															
545				550						555				560																
His	Asp	Glu	His	Thr	Thr	Val	Glu	Phe	Ile	Lys	Glu	His	Leu	Asn	Glu															

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865 870 875 880
Gln Thr His Val Val Asp Arg Gly Thr Ile Ala Ile Asn Asn Ala Ala
 885 890 895

Ile Lys Leu Val Gly Asp Lys Ala Lys Ile
 900 905

<210> 22
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<212> PRT
<213> Candida tropicalis

<400> 22
Met Ser Pro Val Asp Phe Lys Asp Lys Val Val Ile Ile Thr Ser Ala
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Gly Gly Gly Leu Gly Lys Tyr Tyr Ser Leu Glu Phe Ala Lys Leu Gly
 20 25 30

Ala Lys Val Val Val Asn Asp Leu Gly Gly Ala Leu Asn Gly Gln Gly
 35 40 45

Gly Asn Ser Lys Ala Ala Asp Val Val Val Asp Glu Ile Val Lys Asn
50 55 60

Gly Gly Val Ala Val Ala Asp Tyr Asn Asn Val Leu Asp Gly Asp Lys
65 70 75 80

Ile Val Glu Thr Ala Val Lys Asn Phe Gly Thr Val His Val Ile Ile
 85 90 95

Asn Asn Ala Gly Ile Leu Arg Asp Ala Ser Met Lys Lys Met Thr Glu
100 105 110

Lys Asp Tyr Lys Leu Val Ile Asp Val His Leu Asn Gly Ala Phe Ala
115 120 125

Val Thr Lys Ala Ala Trp Pro Tyr Phe Gln Lys Gln Lys Tyr Gly Arg
130 135 140

Ile Val Asn Thr Ser Ser Pro Ala Gly Leu Tyr Gly Asn Phe Gly Gln
145 150 155 160

Ala Asn Tyr Ala Ser Ala Lys Ser Ala Leu Leu Gly Phe Ala Glu Thr
165 170 175

Leu Ala Lys Glu Gly Ala Lys Tyr Asn Ile Lys Ala Asn Ala Ile Ala
180 185 190

Pro Leu Ala Arg Ser Arg Met Thr Glu Ser Ile Leu Pro Pro Pro Met
195 200 205

Leu Glu Lys Leu Gly Pro Glu Lys Val Ala Pro Leu Val Leu Tyr Leu
210 215 220

Ser	Ser	Ala	Glu	Asn	Glu	Leu	Thr	Gly	Gln	Phe	Phe	Glu	Val	Ala	Ala	
225					230					235					240	
Gly	Phe	Tyr	Ala	Gln	Ile	Arg	Trp	Glu	Arg	Ser	Gly	Gly	Val	Leu	Phe	
				245					250					255		
Lys	Pro	Asp	Gln	Ser	Phe	Thr	Ala	Glu	Val	Val	Ala	Lys	Arg	Phe	Ser	
			260					265					270			
Glu	Ile	Leu	Asp	Tyr	Asp	Asp	Ser	Arg	Lys	Pro	Glu	Tyr	Leu	Lys	Asn	
		275					280					285				
Gln	Tyr	Pro	Phe	Met	Leu	Asn	Asp	Tyr	Ala	Thr	Leu	Thr	Asn	Glu	Ala	
		290				295						300				
Arg	Lys	Leu	Pro	Ala	Asn	Asp	Ala	Ser	Gly	Ala	Pro	Thr	Val	Ser	Leu	
305					310					315					320	
Lys	Asp	Lys	Val	Val	Leu	Ile	Thr	Ser	Ala	Gly	Ala	Gly	Leu	Gly	Lys	
				325					330					335		
Glu	Tyr	Ala	Lys	Trp	Phe	Ala	Lys	Tyr	Gly	Ala	Lys	Val	Val	Val	Asn	
			340					345					350			
Asp	Phe	Lys	Asp	Ala	Thr	Lys	Thr	Val	Asp	Glu	Ile	Lys	Ala	Ala	Gly	
		355					360					365				
Gly	Glu	Ala	Trp	Pro	Asp	Gln	His	Asp	Val	Ala	Lys	Asp	Ser	Glu	Ala	
		370				375					380					
Ile	Ile	Lys	Asn	Val	Ile	Asp	Lys	Tyr	Gly	Thr	Ile	Asp	Ile	Leu	Val	
385					390					395					400	
Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Arg	Ser	Phe	Ala	Lys	Met	Ser	Lys	
				405					410					415		
Gln	Glu	Trp	Asp	Ser	Val	Gln	Gln	Val	His	Leu	Ile	Gly	Thr	Phe	Asn	
			420					425					430			
Leu	Ser	Arg	Leu	Ala	Trp	Pro	Tyr	Phe	Val	Glu	Lys	Gln	Phe	Gly	Arg	
		435					440					445				
Ile	Ile	Asn	Ile	Thr	Ser	Thr	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	Gly	Gln	
		450				455					460					
Ala	Asn	Tyr	Ser	Ser	Ser	Lys	Ala	Gly	Ile	Leu	Gly	Leu	Ser	Lys	Thr	
465					470					475					480	
Met	Ala	Ile	Glu	Gly	Ala	Lys	Asn	Asn	Ile	Lys	Val	Asn	Ile	Val	Ala	
				485					490					495		
Pro	His	Ala	Glu	Thr	Ala	Met	Thr	Leu	Thr	Ile	Phe	Arg	Glu	Gln	Asp	
			500					505					510			
Lys	Asn	Leu	Tyr	His	Ala	Asp	Gln	Val	Ala	Pro	Leu	Leu	Val	Tyr	Leu	
		515					520					525				

Gly	Thr	Asp	Asp	Val	Pro	Val	Thr	Gly	Glu	Thr	Phe	Glu	Ile	Gly	Gly		
530						535					540						
Gly	Trp	Ile	Gly	Asn	Thr	Arg	Trp	Gln	Arg	Ala	Lys	Gly	Ala	Val	Ser		
545					550					555					560		
His	Asp	Glu	His	Thr	Thr	Val	Glu	Phe	Ile	Lys	Glu	His	Leu	Asn	Glu		
				565					570					575			
Ile	Thr	Asp	Phe	Thr	Thr	Asp	Thr	Glu	Asn	Pro	Lys	Ser	Thr	Thr	Glu		
			580					585					590				
Ser	Ser	Met	Ala	Ile	Leu	Ser	Ala	Val	Gly	Gly	Asp	Asp	Asp	Asp	Asp		
		595					600					605					
Asp	Glu	Asp	Glu	Glu	Glu	Asp	Glu	Gly	Asp	Glu	Glu	Glu	Asp	Glu	Glu		
	610					615					620						
Asp	Glu	Glu	Glu	Asp	Asp	Pro	Val	Trp	Arg	Phe	Asp	Asp	Arg	Asp	Val		
625				630						635					640		
Ile	Leu	Tyr	Asn	Ile	Ala	Leu	Gly	Ala	Thr	Thr	Lys	Gln	Leu	Lys	Tyr		
			645						650					655			
Val	Tyr	Glu	Asn	Asp	Ser	Asp	Phe	Gln	Val	Ile	Pro	Thr	Phe	Gly	His		
			660					665					670				
Leu	Ile	Thr	Phe	Asn	Ser	Gly	Lys	Ser	Gln	Asn	Ser	Phe	Ala	Lys	Leu		
		675					680					685					
Leu	Arg	Asn	Phe	Asn	Pro	Met	Leu	Leu	Leu	His	Gly	Glu	His	Tyr	Leu		
	690					695					700						
Lys	Val	His	Ser	Trp	Pro	Pro	Pro	Thr	Glu	Gly	Glu	Ile	Lys	Thr	Thr		
705					710					715					720		
Phe	Glu	Pro	Ile	Ala	Thr	Thr	Pro	Lys	Gly	Thr	Asn	Val	Val	Ile	Val		
			725						730					735			
His	Gly	Ser	Lys	Ser	Val	Asp	Asn	Lys	Ser	Gly	Glu	Leu	Ile	Tyr	Ser		
			740					745					750				
Asn	Glu	Ala	Thr	Tyr	Phe	Ile	Arg	Asn	Cys	Gln	Ala	Asp	Asn	Lys	Val		
	755						760					765					
Tyr	Ala	Asp	Arg	Pro	Ala	Phe	Ala	Thr	Asn	Gln	Phe	Leu	Ala	Pro	Lys		
	770				775						780						
Arg	Ala	Pro	Asp	Tyr	Gln	Val	Asp	Val	Pro	Val	Ser	Glu	Asp	Leu	Ala		
785					790					795					800		
Ala	Leu	Tyr	Arg	Leu	Ser	Gly	Asp	Arg	Asn	Pro	Leu	His	Ile	Asp	Pro		
			805						810					815			
Asn	Phe	Ala	Lys	Gly	Ala	Lys	Phe	Pro	Lys	Pro	Ile	Leu	His	Gly	Met		
		820					825						830				

Cys Thr Tyr Gly Leu Ser Ala Lys Ala Leu Ile Asp Lys Phe Gly Met
835 840 845

Phe Asn Glu Ile Lys Ala Arg Phe Thr Gly Ile Val Phe Pro Gly Glu
850 855 860

Thr Leu Arg Val Leu Ala Trp Lys Glu Ser Asp Asp Thr Ile Val Phe
865 870 875 880

Gln Thr His Val Val Asp Arg Gly Thr Ile Ala Ile Asn Asn Ala Ala
885 890 895

Ile Lys Leu Val Gly Asp Lys Ala Lys Ile
900 905

<210> 23

<211> 736

<212> PRT

<213> Homo sapiens

<400> 23

Met Gly Ser Pro Leu Arg Phe Asp Gly Arg Val Val Leu Val Thr Gly
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Ala Gly Ala Gly Leu Gly Arg Ala Tyr Ala Leu Ala Phe Ala Glu Arg
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Gly Ala Leu Val Val Val Asn Asp Leu Gly Gly Asp Phe Lys Gly Val
35 40 45

Gly Lys Gly Ser Leu Ala Ala Asp Lys Val Val Glu Glu Ile Arg Arg
50 55 60

Arg Gly Gly Lys Ala Val Ala Asn Tyr Asp Ser Val Glu Glu Gly Glu
65 70 75 80

Lys Val Val Lys Thr Ala Leu Asp Ala Phe Gly Arg Ile Asp Val Val
85 90 95

Val Asn Asn Ala Gly Ile Leu Arg Asp Arg Ser Phe Ala Arg Ile Ser
100 105 110

Asp Glu Asp Trp Asp Ile Ile His Arg Val His Leu Arg Gly Ser Phe
115 120 125

Gln Val Thr Arg Ala Ala Trp Glu His Met Lys Lys Gln Lys Tyr Gly
130 135 140

Arg Ile Ile Met Thr Ser Ser Ala Ser Gly Ile Tyr Gly Asn Phe Gly
145 150 155 160

Gln Ala Asn Tyr Ser Ala Ala Lys Leu Gly Leu Leu Gly Leu Ala Asn
165 170 175

Ser Leu Ala Ile Glu Gly Arg Lys Ser Asn Ile His Cys Asn Thr Ile
180 185 190

Ala	Pro	Asn	Ala	Gly	Ser	Arg	Met	Thr	Gln	Thr	Val	Met	Pro	Glu	Asp
		195					200					205			
Leu	Val	Glu	Ala	Leu	Lys	Pro	Glu	Tyr	Val	Ala	Pro	Leu	Val	Leu	Trp
	210					215					220				
Leu	Cys	His	Glu	Ser	Cys	Glu	Glu	Asn	Gly	Gly	Leu	Phe	Glu	Val	Gly
225					230					235					240
Ala	Gly	Trp	Ile	Gly	Lys	Leu	Arg	Trp	Glu	Arg	Thr	Leu	Gly	Ala	Ile
				245					250					255	
Val	Arg	Gln	Lys	Asn	His	Pro	Met	Thr	Pro	Glu	Ala	Val	Lys	Ala	Asn
			260					265					270		
Trp	Lys	Lys	Ile	Cys	Asp	Phe	Glu	Asn	Ala	Ser	Lys	Pro	Gln	Ser	Ile
		275					280					285			
Gln	Glu	Ser	Thr	Gly	Ser	Ile	Ile	Glu	Val	Leu	Ser	Lys	Ile	Asp	Ser
	290					295					300				
Glu	Gly	Gly	Val	Ser	Ala	Asn	His	Thr	Ser	Arg	Ala	Thr	Ser	Thr	Ala
305					310					315					320
Thr	Ser	Gly	Phe	Ala	Gly	Ala	Ile	Gly	Gln	Lys	Leu	Pro	Pro	Phe	Ser
				325					330					335	
Tyr	Ala	Tyr	Thr	Glu	Leu	Glu	Ala	Ile	Met	Tyr	Ala	Leu	Gly	Val	Gly
			340					345					350		
Ala	Ser	Ile	Lys	Asp	Pro	Lys	Asp	Leu	Lys	Phe	Ile	Tyr	Glu	Gly	Ser
		355					360					365			
Ser	Asp	Phe	Ser	Cys	Leu	Pro	Thr	Phe	Gly	Val	Ile	Ile	Gly	Gln	Lys
	370					375					380				
Ser	Met	Met	Gly	Gly	Gly	Leu	Ala	Glu	Ile	Pro	Gly	Leu	Ser	Ile	Asn
385					390					395					400
Phe	Ala	Lys	Val	Leu	His	Gly	Glu	Gln	Tyr	Leu	Glu	Leu	Tyr	Lys	Pro
				405					410					415	
Leu	Pro	Arg	Ala	Gly	Lys	Leu	Lys	Cys	Glu	Ala	Val	Val	Ala	Asp	Val
			420					425					430		
Leu	Asp	Lys	Gly	Ser	Gly	Val	Val	Ile	Ile	Met	Asp	Val	Tyr	Ser	Tyr
	435					440						445			
Ser	Glu	Lys	Glu	Leu	Ile	Cys	His	Asn	Gln	Phe	Ser	Leu	Phe	Leu	Val
	450					455					460				
Gly	Ser	Gly	Gly	Phe	Gly	Gly	Lys	Arg	Thr	Ser	Asp	Lys	Val	Lys	Val
465					470					475					480
Ala	Val	Ala	Ile	Pro	Asn	Arg	Pro	Pro	Asp	Ala	Val	Leu	Thr	Asp	Thr
				485					490					495	

Thr Ser Leu Asn Gln Ala Ala Leu Tyr Arg Leu Ser Gly Asp Trp Asn
500 505 510

Pro Leu His Ile Asp Pro Asn Phe Ala Ser Leu Ala Gly Phe Asp Lys
515 520 525

Pro Ile Leu His Gly Leu Cys Thr Phe Gly Phe Ser Ala Arg Arg Val
530 535 540

Leu Gln Gln Phe Ala Asp Asn Asp Val Ser Arg Phe Lys Ala Ile Lys
545 550 555 560

Ala Arg Phe Ala Lys Pro Val Tyr Pro Gly Gln Thr Leu Gln Thr Glu
565 570 575

Met Trp Lys Glu Gly Asn Arg Ile His Phe Gln Thr Lys Val Gln Glu
580 585 590

Thr Gly Asp Ile Val Ile Ser Asn Ala Tyr Val Asp Leu Ala Pro Thr
595 600 605

Ser Gly Thr Ser Ala Lys Thr Pro Ser Glu Gly Gly Lys Leu Gln Ser
610 615 620

Thr Phe Val Phe Glu Glu Ile Gly Arg Arg Leu Lys Asp Ile Gly Pro
625 630 635 640

Glu Val Val Lys Lys Val Asn Ala Val Phe Glu Trp His Ile Thr Lys
645 650 655

Gly Gly Asn Ile Gly Ala Lys Trp Thr Ile Asp Leu Lys Ser Gly Ser
660 665 670

Gly Lys Val Tyr Gln Gly Pro Ala Lys Gly Ala Ala Asp Thr Thr Ile
675 680 685

Ile Leu Ser Asp Glu Asp Phe Met Glu Val Val Leu Gly Lys Leu Asp
690 695 700

Pro Gln Lys Ala Phe Phe Ser Gly Arg Leu Lys Ala Arg Gly Asn Ile
705 710 715 720

Met Leu Ser Gln Lys Leu Gln Met Ile Leu Lys Asp Tyr Ala Lys Leu
725 730 735

<210> 24

<211> 736

<212> PRT

<213> Homo sapiens

<400> 24

Met Gly Ser Pro Leu Arg Phe Asp Gly Arg Val Val Leu Val Thr Ser

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Ala	Gly	Ala	Gly	Leu	Gly	Arg	Ala	Tyr	Ala	Leu	Ala	Phe	Ala	Glu	Arg				
			20					25					30						
Gly	Ala	Leu	Val	Val	Val	Asn	Asp	Leu	Gly	Gly	Asp	Phe	Lys	Gly	Val				
		35					40					45							
Gly	Lys	Gly	Ser	Leu	Ala	Ala	Asp	Lys	Val	Val	Glu	Glu	Ile	Arg	Arg				
	50						55				60								
Arg	Gly	Gly	Lys	Ala	Val	Ala	Asn	Tyr	Asp	Ser	Val	Glu	Glu	Gly	Glu				
65					70					75					80				
Lys	Val	Val	Lys	Thr	Ala	Leu	Asp	Ala	Phe	Gly	Arg	Ile	Asp	Val	Val				
				85					90					95					
Val	Asn	Asn	Ala	Gly	Ile	Leu	Arg	Asp	Arg	Ser	Phe	Ala	Arg	Ile	Ser				
			100					105					110						
Asp	Glu	Asp	Trp	Asp	Ile	Ile	His	Arg	Val	His	Leu	Arg	Gly	Ser	Phe				
		115					120					125							
Gln	Val	Thr	Arg	Ala	Ala	Trp	Glu	His	Met	Lys	Lys	Gln	Lys	Tyr	Gly				
		130				135					140								
Arg	Ile	Ile	Met	Thr	Ser	Ser	Ala	Ser	Gly	Ile	Tyr	Gly	Asn	Phe	Gly				
145					150				155						160				
Gln	Ala	Asn	Tyr	Ser	Ala	Ala	Lys	Leu	Gly	Leu	Leu	Gly	Leu	Ala	Asn				
				165					170					175					
Ser	Leu	Ala	Ile	Glu	Gly	Arg	Lys	Ser	Asn	Ile	His	Cys	Asn	Thr	Ile				
			180					185					190						
Ala	Pro	Asn	Ala	Gly	Ser	Arg	Met	Thr	Gln	Thr	Val	Met	Pro	Glu	Asp				
		195					200					205							
Leu	Val	Glu	Ala	Leu	Lys	Pro	Glu	Tyr	Val	Ala	Pro	Leu	Val	Leu	Trp				
		210				215					220								
Leu	Cys	His	Glu	Ser	Cys	Glu	Glu	Asn	Gly	Gly	Leu	Phe	Glu	Val	Gly				
225					230					235					240				
Ala	Gly	Trp	Ile	Gly	Lys	Leu	Arg	Trp	Glu	Arg	Thr	Leu	Gly	Ala	Ile				
				245					250					255					
Val	Arg	Gln	Lys	Asn	His	Pro	Met	Thr	Pro	Glu	Ala	Val	Lys	Ala	Asn				
			260					265					270						
Trp	Lys	Lys	Ile	Cys	Asp	Phe	Glu	Asn	Ala	Ser	Lys	Pro	Gln	Ser	Ile				
		275					280					285							
Gln	Glu	Ser	Thr	Gly	Ser	Ile	Ile	Glu	Val	Leu	Ser	Lys	Ile	Asp	Ser				
		290				295			</										

10060230 020400

305		310		315		320
Thr Ser Gly Phe	Ala Gly Ala Ile Gly Gln Lys Leu Pro Pro Phe Ser					
	325			330		335
Tyr Ala Tyr	Thr Glu Leu Glu Ala Ile Met Tyr Ala Leu Gly Val Gly					
	340			345		350
Ala Ser Ile Lys Asp Pro Lys Asp Leu Lys Phe Ile Tyr Glu Gly Ser						
	355			360		365
Ser Asp Phe Ser Cys Leu Pro Thr Phe Gly Val Ile Ile Gly Gln Lys						
	370			375		380
Ser Met Met Gly Gly Gly Leu Ala Glu Ile Pro Gly Leu Ser Ile Asn						
	385			390		395
Phe Ala Lys Val Leu His Gly Glu Gln Tyr Leu Glu Leu Tyr Lys Pro						
	405			410		415
Leu Pro Arg Ala Gly Lys Leu Lys Cys Glu Ala Val Val Ala Asp Val						
	420			425		430
Leu Asp Lys Gly Ser Gly Val Val Ile Ile Met Asp Val Tyr Ser Tyr						
	435			440		445
Ser Glu Lys Glu Leu Ile Cys His Asn Gln Phe Ser Leu Phe Leu Val						
	450			455		460
Gly Ser Gly Gly Phe Gly Gly Lys Arg Thr Ser Asp Lys Val Lys Val						
	465			470		475
Ala Val Ala Ile Pro Asn Arg Pro Pro Asp Ala Val Leu Thr Asp Thr						
	485			490		495
Thr Ser Leu Asn Gln Ala Ala Leu Tyr Arg Leu Ser Gly Asp Trp Asn						
	500			505		510
Pro Leu His Ile Asp Pro Asn Phe Ala Ser Leu Ala Gly Phe Asp Lys						
	515			520		525
Pro Ile Leu His Gly Leu Cys Thr Phe Gly Phe Ser Ala Arg Arg Val						
	530			535		540
Leu Gln Gln Phe Ala Asp Asn Asp Val Ser Arg Phe Lys Ala Ile Lys						
	545			550		555
Ala Arg Phe Ala Lys Pro Val Tyr Pro Gly Gln Thr Leu Gln Thr Glu						
	565			570		575
Met Trp Lys Glu Gly Asn Arg Ile His Phe Gln Thr Lys Val Gln Glu						
	580			585		590
Thr Gly Asp Ile Val Ile Ser Asn Ala Tyr Val Asp Leu Ala Pro Thr						
	595			600		605
Ser Gly Thr Ser Ala Lys Thr Pro Ser Glu Gly Gly Lys Leu Gln Ser						

